

## MMTO Technical Memoranda

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### 1975 - 1980

- 75-1 AZ Bearing and Servo Control Tests  
C. Janes
- 79-1 Intensity Rings in Out-of-Focus MMT Star Images  
J.M. Beckers, J.T. Williams
- 80-1 Results of May 5, 1980 Active Optics Test Run  
J.M. Beckers, J. Robinson
- 80-2 Astigmatism in Guide Alignment Telescope  
J.M. Beckers
- 80-3 Internal Seeing in the MMT and its Effect on the Laser Coalignment System  
J.M. Beckers, F. Burnette, J. Robinson
- 80-4 Thermal Gradients in MMT Chamber  
J.M. Beckers, W. Light, J.T. Williams
- 80-5 Wind-Induced Mount Tracking Errors  
B.L. Ulich
- 80-6 MMT Polarization Properties  
D. McCarthy
- 80-7 New Data on Stellar Densities  
M. Lebofsky

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### 1981

- 81-1 Radiation Cooling of MMT Optical Support Structure and Building, Possible Solutions  
J.M. Beckers, B.L. Ulich
- 81-2 Report on Engineering Tests at the MMT  
B.L. Ulich
- 81-3 An Engineering Demonstration of A Telescope Coalignment System  
W.F. Wyatt, W.P. Goring, D.K. Gilmore
- 81-4 Dimensional Stability of Top Box Image Viewing System  
D. Gilmore, R. Tucker, J.M. Beckers

- 81-5 Performance of Top Box Optics  
J.M. Beckers, K. Gilmore, R. Tucker
  - 81-6 Use of Grinnell Leaky Memory to Reduce Seeing Aliasing in Rapid Guiding  
J.M. Beckers
  - 81-7 Implementation and Initial Tests of an Open-Loop Telescope Coalignment System  
B.L. Ulich, J.W. Montgomery, W.P. Goring, D.K. Gilmore
  - 81-8 Test of Fairchild CCD Camera in MMT Focal Plane -- Telescope Aberrations and Ultimate MMT Image Quality  
J.M. Beckers
  - 81-9 Test of Total Internal Reflection Prism  
J.R.P. Angel, J.M. Beckers
  - 81-10 Light Scattering in the MMT  
R. Schild, J. Geary
  - 81-11 Surface Quality of MMT Beam Combiner  
J.M. Beckers
  - 81-12 Optimizing Image Quality in One MMT Telescope  
J.M. Beckers
  - 81-13 New Instrument Rotator Software  
B.L. Ulich
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## **1982**

- 82-1 Mount Control Equations  
B.L. Ulich
- 82-2 Progress Report on Mount Pointing and Tracking  
B.L. Ulich
- 82-3 Passive and Open-Loop Coalignment of the MMT  
B.L. Ulich
- 82-4 New Mount Control Software  
B.L. Ulich
- 82-5 T.C.S. Open-Loop/Auto-Stacking Software  
B.L. Ulich

- 82-6 Mount Tracking Errors at Various Tracking Rates Using the MMT Mount Computer Parallel Interface and Parallel Software  
B.L. Ulich, W.P. Goring, D.K. Gilmore, M.T. Chamberlin, J.W. Montgomery
- 82-7 New TCS Program  
B.L. Ulich, J.W. Montgomery
- 82-8 Ultimate Performance Goals for MMT  
J.M. Beckers, B.L. Ulich
- 82-9 Interim Report on MMT Seeing Tests  
J.M. Beckers
- 82-10 Mount Control Software Summary  
R.J. Weymann, M.T. Chamberlin, B.L. Ulich
- 82-11 Using the Data General 8020 Floating Point Boards with the POINT 4 Mark VIII Computer  
W.P. Goring, J.B. Rill, W.F. Wyatt
- 82-12 Update MMT Seeing Statistics  
J.M. Beckers
- 82-13 The Use of Hose Clamps to Hold MMT Tertiary Mirrors  
J.M. Beckers, R. Tucker
- 82-14 Beamcombiner X and Y Stages  
W.B. Davison
- 82-15 Emissivity of the Multiple Mirror Telescope  
G. and M. Rieke
- 82-16 Plans for Improvement of MMT Throughput  
J.M. Beckers
- 82-17 Tests of Three New Tertiary Mirror  
J.M. Beckers
- 82-18 Specifications for MMT Primary Mirror Performance  
J.M. Beckers
- 82-19 Pathlength Adjustments in MMT on the Basis of the October 1, 1982 Measurements  
J.M. Beckers
- 82-20 Combining the 6 MMT Beams Coherently with Minimum Amount of Effort  
J.M. Beckers, E.K. Hege

82-21 Mount Control Servo Algorithm (Revised, see 83-5 & 83-12)  
B.L. Ulich

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## 1983

83-1 Image Stacking and Guiding Accuracy  
B.L. Ulich

83-2 MMT Integrating Digital TV and Its Limiting Magnitude  
J.M. Beckers, D.K. Gilmore, J.W. Montgomery, C. Poland, J.T. Williams

83-3 MMT Mount Computer/SAE Diagnostic Modem Link  
W.P. Goring

83-4 Test of MMT Phasing  
J.M. Beckers, E.K. Hege, D. McCarthy

83-5 Mount Control Servo Algorithm (Revised, see 83-12)  
B.L. Ulich

83-6 Emissivity of MMT  
G. Rieke

83-7 Tracking the Space Shuttle from June 20-23  
J.M. Beckers, J.T. Williams, M.T. Chamberlin, J. Robertson, J. McAfee

83-8 TCS Autoguiding Performance  
B.L. Ulich

83-9 A New Scheme to Coalign and Cophase a MMT Type Telescope  
J.M. Beckers

83-10 Optimizing Polygonal MMT Arrays for Maximum (U,V) Plane Coverage  
J.M. Beckers

83-11 TCS Grinnell Overlay and 16 Bit Deep Integration Capability  
W.P. Goring

83-12 Mount Control Servo Algorithm (Revised)  
B.L. Ulich

83-13 Specifications on the Mounting of the Mirror which Feeds the Top Box Optics  
J.M. Beckers

- 83-14 Level Output Bits for Diagnostics  
W.P. Goring
- 83-15 Fringe Contrast Measurements for Telescope Phasing  
S.B. Shaklan, E.K. Hege, J.M. Beckers
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## 1984

- 84-1 Open-Loop Flexure Coefficients for MMT Phasing  
J.M. Beckers, E.K. Hege
- 84-2 Effects of Wind Loading on Telescope Pointing  
E.K. Hege, J.M. Beckers
- 84-3 Evaluation of TCS Autostacking Routine During Engineering Run - January 3, 1984  
C.C. Janes
- 84-4 MMT TCS Evaluation - December 10-13, 1983  
C.C. Janes
- 84-5 New Procedure to Update Flexure Coefficients  
C.C. Janes, J.W. Montgomery
- 84-6 Test of Second MMT Beamcombiner  
J.M. Beckers
- 84-7 Correcting Periodic Error in Telescope Absolute Encoders  
C.C. Janes, J.W. Montgomery
- 84-8 The MMTO Top Box  
D.R. Blanco, W.P. Goring, C.C. Janes, C. Poland, J.W. Montgomery
- 84-9 More on Open-Loop Flexure Curves for MMT Phasing  
J.M. Beckers, E.K. Hege
- 84-10 Abridged I-Ret Software Guide  
F.H. Chaffee, Jr., D.K. Gilmore, D.B. Ouellette, D. Iadevaia
- 84-11 Control Room Consoles  
C. Heller, C. Janes, J. McAfee, J. Robertson
- 84-12 Chiller System Controls  
D. Blanco, C. Poland
- 84-13 Brake/Drive Sequencing  
F.H. Sharp

- 84-14 Pre-Limit/Emergency Stop of Telescope Drives  
F.H. Sharp
  - 84-15 Tertiary Mirror Mounts  
D.R. Blanco, J.T. Williams
  - 84-16 MMT Video Distribution System  
D.K. Gilmore, C.S. Thompson
  - 84-17 Correcting Periodic Error in Telescope Absolute Encoders  
B.L. Ulich, J.W. Montgomery, A.D. Poyner, C.C. Janes
  - 84-18 Operational Periodic Error Corrections  
A.D. Poyner, J.W. Montgomery
  - 84-19 Simplified Precession Routine for the Mount Computer  
A.D. Poyner
  - 84-20 Observing Catalog Preparation Guide  
C.B. Foltz, F.H. Chaffee, Jr.
  - 84-21 Review of Communication Requirements at MMTO  
C.C. Janes, J.W. Montgomery
  - 84-22 MMT Open and Closed Loop Coalignment Software and Open Loop Phasing Software  
(TCS Manual)  
J.W. Montgomery
  - 84-23 Mount Computer Operator's Manual (Revised, see 86-4)  
A.D. Poyner
  - 84-24 Instrument Cabling Plan  
C.C. Janes
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## 1985

- 85-1 Operation of the Multiple Mirror Telescope Spectrograph (Revised, see 88-3)  
R.J. Weymann, C.B. Foltz, D.B. Ouellette
- 85-2 The IRIS System for the Multiple Mirror Telescope  
M.E. Regina
- 85-3 New Top Box  
D. Blanco, F. Chaffee, C. Heller, C. Janes, D. Ouellette, A. Poyner, F. Sharp, J.  
Montgomery, and J.T. Williams

- 85-4 Progress Report on Using Etalons for Wavelength Calibration  
C.B. Foltz, f.H. Chaffee, D.B. Ouellette, and D.R. Blanco
- 85-5 I-CCD and I-VID Camera Control  
B. O'Connor
- 85-6 Alignment Requirements for Autoguiding  
D. Blanco, C. Janes, L. Vaughn, and J.T. Williams
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## 1986

- 86-1 Offset Autoguiding with the SAO-CCD  
C. Janes and J. Montgomery
- 86-2 Interfacing Instrument Control Computers to Certain Top Box Functions  
A. Poyner, F. Sharp, and C. Foltz
- 86-3 Echelle Computer Control and Remote Observing  
A. Poyner, C. Foltz, F. Chaffee
- 86-4 Mount Computer Operator's Manual (Revised, see 84-23)  
A. Poyner
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## 1987

- 87-1 Reducing MMT Spectrograph Data with IRAF  
P. Massey
- 87-2 6.5 M Upgrade Engineering Calculations  
D.R. Blanco
- 87-3 Specifying and Holding Collimation Tolerances on Fast Cassegrain Telescopes  
D.R. Blanco
- 87-4 User's Guide to the M.M.T.O. Spectrograph Control Programs (Revised, see 88-2)  
A.D. Poyner
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## 1988

- 88-1 Calibration of the MMT Focal Plane Scale  
D. Fabricant, J. McClintock, D. Blanco

- 88-2 User's Guide to the MMTO Spectrograph Control Programs - Version 4.1  
A.D. Poyner
- 88-3 Operation of the MMT Spectrograph (Version 4) (Revised, see Version 4.1)  
C.B. Foltz, D.B. Ouellette
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## 1989

- 89-1 Phased Geometry for the MMT  
D. Blanco
- 89-2 Smoke-Wire Flow Visualization of Flow over a Model of the Multiple Mirror Telescope  
B. Marasli
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## 1992

- 92-1 Coordinate Transformations at the MMTO  
A.D. Poyner
- 92-2 Adaptive Optics at the MMT  
R. Angel, P. Christophorov, R. Dekany, R. Kupke, M. Lloyd-Hart, B. McLeod, I. Scott-Fleming, T. Trebisky, D. Wittman, P. Wizinowich
- 92-3 "cats" The MMT Catalog Browser  
A. Poyner
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## 1999

- 99-1 Meteorological Data for Mt. Hopkins  
A. A. E. Milone, C. Heller, J. McAfee
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## 2001

- 01-1 Baseline Shack Hartmann Design for the 6.5m MMT f/9 Focus  
S. C. West, H. Olson
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## 2003

- 03-1 Fall 2002 F/9 Optical Performance of the 6.5m MMT Analyzed with the Top Box Shack-Hartmann Wavefront Sensor  
S. C. West
  - 03-2 Test Report for MMT F/5 Secondary Mirror  
Steward Observatory Mirror Lab
  - 03-3 Status of Pointing of the 6.5 m MMT  
T. Trebisky, C. Foltz, S. West
  - 03-4 Modifications to the f/9 Secondary Mirror Hardpoints  
S. C. West, S. P. Callahan, R. James, D. Clark, C. Wainwright, K. Van Horn
  - 03-5 Segmented Zero-Deviation Cross-Dispersion Prisms for the Hectochelle Multiobject Spectrograph  
D. G. Fabricant, A. Szentgyorgyi, H. W. Epps
  - 03-6 F/9 Top-Box Shack-Hartmann: Practical Design and Implementation  
S. C. West, S. P. Callahan, R. James, P. Spencer, H. Olson, B. Kindred, R. Ortiz, T. Pickering
  - 03-7 Evaluation of Thermal Performance for the MMT Primary Mirror During January 2003  
J. D. Gibson
  - 03-8 In Situ Aluminization of the MMT 6.5m Primary Mirror  
W. Kindred, J. T. Williams, D. Clark
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## 2010

- 10-1 Calibration and Correction of Amplifier Induced Artifacts in an Interleaved InSb Infrared Array  
M. A. Kenworthy and P. M. Hinz